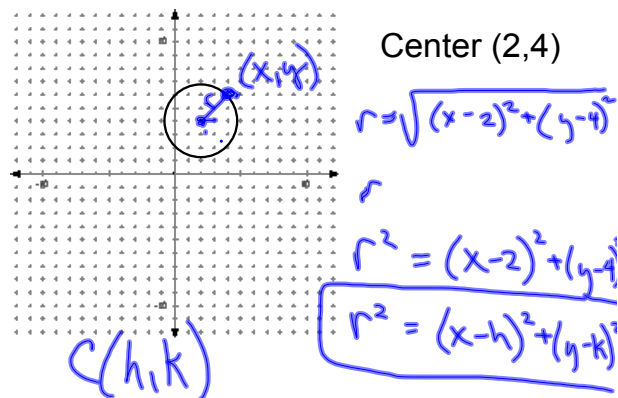


# 10-8 Equations of Circles



Write the equation of a circle with:

C(3, -3) and d = 12  $r = 6$

$$r^2 = (x-h)^2 + (y-k)^2$$

$$36 = (x-3)^2 + (y+3)^2$$

Write the equation of a circle with:

C(-12, -1) and r = 8

$$64 = (x+12)^2 + (y+1)^2$$

Write the equation of a circle with:  
Diameter endpoints  $(-3, -2)$  and  $(9, 4)$

Use midpt. to find center

$$C\left(\frac{-3+9}{2}, \frac{-2+4}{2}\right)$$

$$C(3, 1)$$

$$r^2 = (x-3)^2 + (y-1)^2$$

Plug  
(9,4)  
in to find r

$$r^2 = (9-3)^2 + (4-1)^2$$

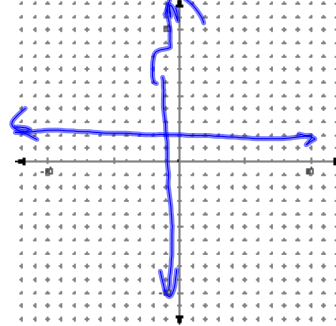
$$36 + 9$$

$$r^2 = 45$$

$$45 = (x-3)^2 + (y-1)^2$$

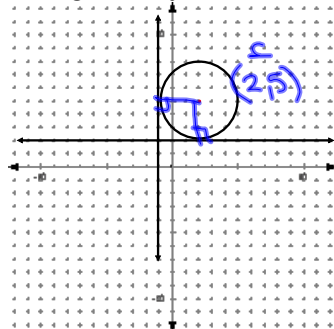
Write the equation of a circle with:

- Center in quadrant I
- $d = 6$   $r = 3$
- tangent to  $y = 2$  and  $x = -1$



Write the equation of a circle with:

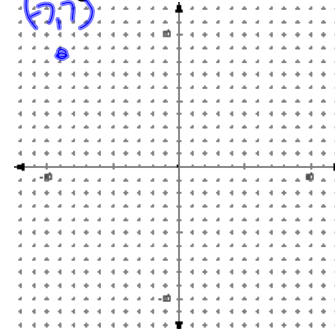
- Center in quadrant I
- $d = 6$   $r = 3$
- tangent to  $y = 2$  and  $x = -1$



$$9 = (x-2)^2 + (y-5)^2$$

Write the equation of a circle with:

- Center in quadrant II
- $r = 7$
- tangent to both the x-axis and y-axis



$$49 = (x+7)^2 + (y+7)^2$$

Write the equation of a circle with:

C(4, 2) and a point on the circle (8, -1)

$$r^2 = (x - 4)^2 + (y - 2)^2$$

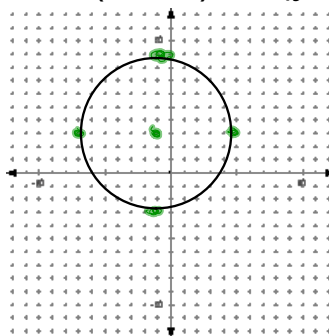
$$r^2 = (8 - 4)^2 + (-1 - 2)^2$$

$$r^2 = 25$$

$$25 = (x - 4)^2 + (y - 2)^2$$

Graph the following circle:

$$36 = (x + 1)^2 + (y - 3)^2$$



$$C(-1, 3)$$

$$r = 6$$

$$x^2 + y^2 = 16$$

What is the center?

$$(0, 0)$$

What is the radius?

$$4$$

HW

p578

14, 16-20, 23, 24, 28, 32

Write an equation for each circle.

14. center at  $(5, 10)$ ,  $r = 7$

16. center at  $(-8, 8)$ ,  $d = 16$

17. center at  $(-3, -10)$ ,  $d = 24$

18. a circle with center at  $(-3, 6)$  and a radius with endpoint at  $(0, 6)$

19. a circle with a diameter that has endpoints at  $(2, -2)$  and  $(-2, 2)$

20. a circle with a diameter that has endpoints at  $(-7, -2)$  and  $(-15, 6)$

23. a circle with its center in quadrant I, radius of 5 units, and tangents  $x = 2$  and  $y = 3$

Graph each equation.

24.  $x^2 + y^2 = 25$

28.  $(x - 2)^2 + (y - 1)^2 = 4$

32. Find the radius of a circle with equation  $(x - 2)^2 + (y - 2)^2 = r^2$  that contains the point at  $(2, 5)$ .